COMMUNICATION GUIDELINES FOR EPIDEMIC VIRUS AND FLU OUTBREAKS IN SCHOOLS FOLLOWING THE 2009 H1N1 PANDEMIC

by

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STATEMENT OF THESIS APPROVAL

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ABSTRACT

In April of 2009, a group of high school students from Summit County, Utah who were on vacation in Mexico during spring break contracted a new strain of the H1N1 virus that was quickly spreading throughout Mexico and the U.S. Immediately following the outbreak, situation updates were being sent from the CDC through local health departments and directed toward schools. Concerned health department officials worried that all of this information was not being immediately delivered to the parents of students in affected schools.

The goal of this study was to conduct a total sample survey of all parents of students in two of the initially affected schools, Park City High School and Treasure Mountain Junior High. A 20-item questionnaire was created to determine the parents' preferred method of receiving school health information and assess parents' opinions on school closure, absenteeism, and disease prevention. Of the 1700 surveys distributed, 161 were returned. The data were entered into an SPSS database and analyzed for descriptive statistics (percentages, numbers).

The results suggested that 87.7% of the parents preferred health information be sent to them rather than posted in a location that they must seek out. Email messages were preferred over website postings. Most parents (88.7%) were in favor of immediate school closure in the event of an outbreak of a highly contagious disease. Finally, while many parents felt that the school was doing a moderately good job of educating students on

how to prevent spreading disease, there was some improvement needed in this area.

Though the threat of the 2009 H1N1 flu outbreak has largely been alleviated for now, new strains of seasonal flu are constantly a threat. This survey showed that parents have distinct opinions about the dissemination of health information and the need for it to be delivered directly to them in the event of a crisis. Repeating parent opinion surveys every few years to include incoming students is highly recommended to create clearer lines of communication and possibly decrease the spread of disease in the event of a contagious disease outbreak in the future.

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CHAPTER 1

PANDEMIC OUTBREAK OF H1N1 VIRUS AND NEED FOR IMPROVED HEALTH INFORMATION DISSEMINATION

Introduction

Following the pandemic outbreak of the Novel H1N1 flu virus in April of 2009, the Center for Disease Control and Prevention (CDC) frequently updated the Salt Lake Valley and Summit County Health Departments regarding outbreaks and spread of this virus. The health departments forwarded pertinent information to the local school superintendents. While this line of communication was clear, the dissemination of this information to parents and students was less well defined. The parents' preferred route of dissemination of health information was merely speculated upon. Health departments were unsure of whether or not all of the information they sent to superintendents was being passed on to principals, teachers, and students and if so, by what medium. Further, while schools in the Summit County School District did close, it was unknown whether parents were in favor of immediate school closure. It was also unknown if parents knew of the symptoms for which they should be keeping their child at home and away from public venues.

The first cases of the Novel H1N1 virus were reported in Mexico during the spring of 2009. This virus spread rapidly through Mexico and quickly to several countries

including the United States. Much of the spread came from travelers who had vacationed in Mexico during the outbreak and carried the virus back to their home countries. Within 26 weeks from initial confirmation of the virus, the Novel H1N1 virus (initially called Swine Influenza) infected people in every state in the United States. Initial reports by the CDC reported increasing outbreaks of the virus throughout the U.S., with 11 states reporting local activity, 14 states reporting regional activity, and 9 states reporting widespread activity. The outbreak continued so rapidly that the CDC discontinued reporting individual cases after July 24, 2009 (http://www.cdc.gov/h1n1flu/updates/072409.htm).

The pace at which this pandemic spread was remarkable. The CDC reported the first confirmed case of the current H1N1 virus in the United States on April 15, 2009. A second case was confirmed 2 days later. By April 22, 2009 the CDC had determined that the virus was able to be spread from person-to-person and activated its Emergency Operations Center in order to coordinate a public health response and disseminate information to the public. Approximately 10 days after the first case was confirmed, the U.S. Government declared a public health emergency (http://www.cdc.gov/h1n1flu/updates/051409.htm). In the weeks that followed, the virus was tracked throughout the United States and unfolding information to the public was released on a nearly hourly basis.

By April 30, 2009, three students in Summit County School District in Park City, Utah were suspected of and later confirmed to have the H1N1 virus. Schools in Summit County were immediately closed until May 4, 2009. In an interview with KSL News, "Park City District Superintendent Ray Timothy said that one of the three students who

may have swine flu went to Mexico for spring break. Now two others are sick also…. (Timothy stated that the students) are elementary, (and) middle school age, but they've had interactions with all age groups, so we decided to shut down all schools" (http://www.ksl.com/?nid=148&sid=6322289). As of July 10, 2009, Utah had 973 confirmed cases, though the number is actually much higher as doctors have been treating patients with symptoms without requiring testing. " The CDC estimated that between 14 million and 34 million cases of the Novel H1N1 influenza occurred between April and October 17, 2009. Later estimates showed that up to 89 million cases of H1N1 occurred between April of 2009 and April of 2010, with up to 12,470 deaths in the United States alone (http://www.cdc.gov/h1n1flu/). As of August 2010, the CDC reported that the H1N1 virus was postpandemic. However, several countries were still seeing cases of H1N1 in January 2011. These areas include England, Ireland, Germany, Sri Lanka, Korea, New Zealand, and India (http://www.cdc.gov/h1n1flu/).

The World Health Organization (WHO) announced an official pandemic flu situation on June 11, 2009, stating, "The pandemic situation is currently at its highest level, which is a Phase 6" (http://www.who.int/csr/diseases/swinelu/phase/en/).

> Phase 5 is characterized by human-to-human spread of the virus into at least two countries in one WHO region. While most countries will not be affected at this stage, the declaration of Phase 5 is a strong signal that a pandemic is imminent and that the time to finalize the organization, communication, and implementation of the planned mitigation measures is short. Phase 6 the pandemic phase, is characterized by community level outbreaks in at least one other country in a different WHO region in addition to the criteria defined in Phase 5. Designation of this phase will indicate that a global pandemic is under way. (http://blogs.wsi.com/health/2009/04/27/understanding-the-whos-global-pandemic_alert-levels/).

According to Dr. E.D. Kilbourne, emeritus professor of microbiology and

immunology at New York Medical College, “Experience has shown a decrease or even disappearance of epidemic viruses in the summer. However, they return in winter to produce the disease in conditions favoring transmission: indoor crowding and decreased relative humidity” (Kilbourne, 2006, p. 14). This in fact, was the case with the Novel H1N1 virus, as incidence of the virus increased once students started back to school in autumn 2009.

The strain of Novel H1N1 virus seen in the outbreak of 2009 was “a recent reassortant of the triple-reassortant swine influenza A (H1) viruses and a Eurasian swine influenza virus, resulting in the swine-origin influenza A (H1N1) virus (S-OIV), currently being transmitted among humans” (Belshe, 2009, p. 3). A reassortant virus is one containing two or more pieces of a segmented genome from different parent viruses. This Novel H1N1virus included a combination of genes from human flu viruses as well as genes from both swine and bird viruses. It was a highly contagious flu virus. It is easily spread from person to person. Symptoms included fever, sore throat, stuffy nose, chills, fatigue, headache, and possibly diarrhea and vomiting. The virulence of Novel H1N1 (initially called Swine Influenza) was shown to be mild. However, in patients with additional health complications, it was deadly. The H1N1 virus also showed some signs of mutating. According to the WHO, a third person with oseltamivir resistant novel H1N1 virus was identified on July 7, 2009. The WHO stated: “All three people fully recovered after uncomplicated illnesses and did not have contact with each other. Two of the three people are reported to he developed illness while taking oseltamivir preventatively after an exposure to a close contact with this novel influenza A (H1N1). The third person had no known exposure to oseltamivir”

(http://www.cdc.gov/h1n1flu/HAN/070909.htm).

The flu outbreak of 1918 was also a form of the H1N1 virus, but with a different and much more virulent strain. It was responsible for the deaths of 20-50 million people worldwide. According to the CDC, however, it is unlikely that a strain of H1N1 with the same virulence as the 1918 virus would reappear. However, if we do experience a pandemic similar to that in 2009, it will "most likely be caused by an influenza subtype to which there is little, or no, preexisting immunity in the human population" (http://www.cdc.gov/flu/about/qa/1918flupandemic.htm). Therefore, the possibility of increased virulence due to decreased preexposure and therefore resistance to the strain is more likely.

Public health organizations across the United States conducted mass immunizations in late Fall of 2009 with the Novel H1N1 vaccine. Because of the initial limited supply, only those individuals in high-risk categories and health care workers were initially being vaccinated. According to the Salt Lake County Health Department, high-risk individuals included children less than 2 years of age and those over 65 years of age, or those with health compromising chronic diseases such as diabetes or asthma. Later, the vaccine was available for all desiring to be immunized. Vaccination reporting showed that "from October 10, 2009 to January 2, 2010, the weekly NHFS percentage of U.S. residents who reported they had received at least 1 dose of 2009 H1N1 vaccine rose to 20.3%" (http://www.cdc.gov/mmwr/pdf/wk/mm59e0115.pdf).

School districts are beginning to establish policies that are in line with those recommended by the CDC and local health departments including those that would keep affected children at home. Schools are unlikely to close unless they have a very high

incidence of students with the disease. Hence, the continuing rapid dissemination of accurate information to parents of school-aged children is needed regarding both school closures and what to do if a child is affected with the virus. Parents need to be well informed of the unfolding events surrounding this pandemic. There is no standard dissemination protocol of information to the parents and students from superintendents, principals, and school nurses. Those working in the Salt Lake County Health Department and the Summit County Health Department are concerned that the information sent to these destinations is distributed to parents in a timely manner. Further, health alerts given to parents should include enough information to educate parents on the current threat of the virus and precautions that are being taken to prevent further cases.

Literature Review

In 1993 the CDC defined health communication as the crafting and delivery of messages and strategies, based on consumer research to promote the health of individuals and communities (Roper, 1993). In this article in *Public Health Reports* titled "Health Communication Takes on New Dimensions at CDC," William Roper explains that one of the 5-year goals of the CDC is to ascertain in which ways they should open channels of communication to reach the individual. However, in an age before the widespread use of the Internet, the ideas posed at that time are now antiquated.

In 2001, an article by Kreuter and Holt in *Current Directions in Psychological Science*, the authors state: "Advances in computer technology have made it possible to customize communication, including health-education materials, to the specific needs and interests of any individual. Studies show that individually tailored health-education

materials are helpful in promoting changes in a variety of health-related behaviors" (Kreuter, 2001, p. 207). Kreuter and Holt base their evidence on Petty and Cacioppo's Elaboration Likelihood Model (ELM; 1981), which states that personally relevant information will more likely be processed and acted on by individuals. In both cases, these models show the trending towards and need for health information that is specific to the individual, or a small group of individuals such as those within a particular school district in order for these individuals to make educated decisions regarding their health.

More recently in 2010, in their article "Health Literacy and Health Communication" in *Biopsychosocial Medicine*, authors Ishikawa and Kiuchi state: "Sound health decisions require comprehensible health information that is accessible and appropriate to the needs and cultural and social backgrounds of individuals. Although health care professionals have historically been the primary sources of health and medical information, the increase in media reports and the rapid expansion of the Internet have made other (health) sources more available to the general public" (Ishikawa, 2010, p. 19).

In "The Pink Book – A Planners Guide: Making Health Communication Programs Work" (Pink Book, 2002) published by the U.S. Department of Health & Human Services, the Public Health Service, and the National Institutes of Health, the authors state that health communication can "increase the intended audience's knowledge and awareness of a health issue, problem, or solution, influence perceptions, beliefs, and attitudes that may change social norms, prompt action, and demonstrate or illustrate healthy skills" (p. 14). This is the goal of the CDC in implementing a line of communication to schools. However, while the CDC endorsed the "Pink Book," the development of communication through health departments to schools and eventually to

parents of students is not defined or discussed. Yet the goals and methods that are implemented for the public in general can be applied to schools as well. These include identifying the goal of the communication message, identifying the audience, and identifying the "channels and sources that are considered credible and influential by the intended audience(s)" (Pink Book, 2002, p. 16).

It is the last of these three goals that is addressed by this study. Identifying the channel by which parents can get information in a timely and efficient manner that is that is reliable and informative so that it can be acted upon by parents empowers them to make the decisions about their child's health during a crisis. Ronald L. Rice and James E. Katz address the issue of reliability in their book *The Internet and Health Communication: Experiences and Expectations*. They address many of the problems regarding the Internet and health communication. First and foremost, the problem is one of too much information, so that the number of possible sites overwhelms someone searching for a specific answer. Other problems include the credibility of many of those sites, and finally the "haves and have-nots," i.e., those who have computers, Internet access, the literacy, and the education to understand what they are researching (Rice, 2001). Hence, the health information that parents need in a crisis must be note only timely, but reliable, and within their realm of understanding. It must be tailored to them to aid them in the decisions they need to make about their child. This can empower parents and give them the self-efficacy they need enable them to become involved, educated, and active participants in the prevention of spreading disease during an outbreak that could endanger not only their child but the entire community. None of these articles addresses the specific issue of health communication to schools.

While research has been conducted more recently regarding the importance of specialized health communication to topics such as smoking cessation and obesity, there is little to no research available on the information sent out to parents regarding important judgments about their school-aged child and possible outbreaks at school. Therefore this study represents the beginning of much needed research on how best to communicate with parents through a chain of communication directly from the CDC.

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CHAPTER 2

ARTICLE: COMMUNICATION GUIDELINES FOR EPIDEMIC VIRUS AND FLU OUTBREAKS IN SCHOOLS FOLLOWING THE 2009 H1N1 PANDEMIC

Abstract

In April of 2009, a group of high school students from Summit County, Utah who were on vacation in Mexico during spring break contracted a new strain of the H1N1 virus that was quickly spreading throughout Mexico and the U.S. Immediately following the outbreak, situation updates were being sent from the Center for Disease Control and Prevention (CDC) through local health departments and directed toward schools. Concerned health department officials worried that all of this information was not being immediately delivered to the parents of students in affected schools.

The goal of this study was to conduct a total sample survey of all parents of students in two of the initially affected schools, Park City High School and Treasure Mountain Junior High. A 20-item questionnaire was created to determine the parents' preferred method of receiving school health information and assess parents' opinions on school closure, absenteeism, and disease prevention. Of the 1700 surveys distributed, 161

were returned. The data were entered into an SPSS database and analyzed for descriptive statistics (percentages, numbers).

The results suggested that 87.7% of the parents preferred health information be sent to them rather than posted in a location that they must seek out. Email messages were preferred over website postings. Most parents (88.7%) were in favor of immediate school closure in the event of an outbreak of a highly contagious disease. Finally, while many parents felt that the school was doing a moderately good job of educating students on how to prevent spreading disease, there was some improvement needed in this area.

Though the threat of the 2009 H1N1 flu outbreak has largely been alleviated for now, new strains of seasonal flu are constantly a threat. This survey showed that parents have distinct opinions about the dissemination of health information and the need for it to be delivered directly to them in the event of a crisis. Repeating parent opinion surveys every few years to include incoming students is highly recommended to create clearer lines of communication and possibly decrease the spread of disease in the event of a contagious disease outbreak in the future.

Introduction

The pace at which the Novel H1N1 virus spread during the spring of 2009 was remarkable. According to the CDC, from the first cases reported in early 2009, it took only 26 weeks for the virus to infect people in every state in the United States. The CDC estimated that between 14 million and 34 million cases of 2009 H1N1 occurred between April and October 17, 2009. The midlevel in this range was about 22 million people infected with 2009 H1N1. The CDC reported that the H1N1 virus was postpandemic as

of August 2010. However, several countries were still seeing cases of H1N1 as recently as January 2011. These areas include England, Ireland, Germany, Sri Lanka, Korea, New Zealand, and India (http://www.cdc.gov/h1n1flu/). The virulence of Novel H1N1 (initially called Swine Influenza) was shown to be mild. However, in patients with additional health complications, it was deadly.

In the state of Utah where this study was conducted, three students in Summit County School District in Park City, Utah were the first to be identified as having the H1N1 virus. These were reported on April 30, 2009. Schools in Summit County were immediately closed until May 4. In an interview with KSL, "Park City District Superintendent Ray Timothy said that one of the three students who may have swine flu went to Mexico for spring break. Now two others are sick also…. (Timothy stated that the students) are elementary, (and) middle school age, but they've had interactions with all age groups, so we decided to shut down all schools" (http://www.ksl.com/?nid=148&sid=6322289). As of July 10, Utah had 973 confirmed cases, though the number is actually much higher as doctors have been treating patients with symptoms without requiring testing. The CDC estimated that up to 89 million cases of H1N1 occurred between April of 2009 and April of 2010, with up to 12,470 deaths in the United States alone (http://www.cdc.gov/h1n1flu/).

Problem Statement

In the event of a disease outbreak, the CDC distributes updates to local health departments as information is gathered. This may include information such as recent outbreaks, flu virulence, preventative precautions, recommended school closures, and

vaccine updates. The health department then directs pertinent information to the school superintendents to be distributed to parents of school-aged children. The parents' preferred route of dissemination of health information is largely speculated upon. Health departments expressed concern during the 2009 Novel H1N1 influenza outbreak that not all of the information they sent to superintendents was being passed on to principals, teachers, and parents of students. Further, while schools in the Summit County School district did close at the beginning of this outbreak, it was unknown whether parents were in favor of such an immediate school closure. It was also unknown if parents knew of the symptoms for which they should be keeping their children at home and away from public venues. This study attempts identify the parents' preferred method of health information dissemination, whether or not parents supported school closure, whether parents were aware of symptoms for which their children should be kept at home, and how parents felt the schools were supportive of health prevention measures.

Study Methods

This study addressed the methods of dissemination of health information relating to contagious disease outbreaks such as the Novel H1N1 virus that occurred in 2009. Parents were able to make recommendations about health information delivery, the ease to which parents are able to keep any affected child at home, and whether the school provides education and resources such as the availability of hand sanitizers and time for hand washing during school.

The participants of this study were contacted only after the school superintendent gave permission for this study. No names were included on the self-report questionnaires

that were completed by parents. The questionnaires were returned to the University of Utah, Department of Health Promotion and Education for analysis in SPSS.

Questionnaires with cover letters were distributed to a 100% sample of 7th and 8th graders at Treasure Mountain Jr. High and 9th through 12th graders at Park City High School in May of 2012. One hundred sixty-two surveys (*N*=162) were completed and returned, the majority of which came from parents of 7th through 9th graders. The cover letter informed parents of the study and gave implied consent to use the information they proved in the study upon completion of the questionnaire. The cover letter explained that neither students nor the parents would be identified by name, all of the responses would be kept anonymous, and if they chose not to complete the questionnaire, there would be no loss of educational services.

As there are no standardized survey instruments for this policy study yet developed by CDC or the Salt Lake County Health Department, the PI, a master's student in Health Promotion and Education, Cathy Clayton, has constructed the following survey instruments that are included in the attachments to this study protocol. The survey was brief, consisting of only 20 questions including student and parent demographics. The survey is attached in Appendix A at the end of this document.

To protect confidential data, neither students' nor parents' names were included on the surveys. The surveys were sorted according to student grade only. If more than one child attended the school, parents were asked to fill out the survey only about their oldest child attending the school. The cover letter additionally provided a description of the study and explained that by completing and returning their questionnaire they were giving their permission for their inclusion in the study. No other exclusion criteria were

included. Parents were surveyed as to their preferred manner of communication for health information, their knowledge of exclusion criteria for absenteeism and the financial impact and school support of absenteeism for illness, and finally, their opinion of the school's focus on education of disease prevention.

Participants

Parents in two schools in Summit County School District, the first district in Utah to be affected by the Novel H1N1 virus in 2009, were surveyed as to their opinions in the areas mentioned above. The schools that participated in the survey were Park City High School and Treasure Mountain Jr. High. These schools are located within 1 mile of each other. Both schools were closed as a result of the 2009 H1N1 flu outbreak.

Seventeen hundred surveys (n=1700) were distributed to students in total. Students in Park City High School were give surveys during their morning classes and asked to return the completed survey within 5 days. The surveys at Treasure Mountain Jr. High School were distributed to students during their gym classes and asked to return them within 5 days. A total of 162 surveys were returned for analysis, the majority of which came from Treasure Mountain Jr. High. The low return rate of completed surveys may have been due to the timing of handing them out very late in the spring just before school was about to dismiss for the summer break.

Data Collection and Analysis

The surveys were collected from the teachers by the office secretary and picked up by the investigator. The parent questionnaires were coded only by school and grade code. They did not include any names or identifying demographic information on them. Data were entered into the SPSS program with a school code only. Descriptive statistics included means, percentages, and frequency of responses for each of the question response items. Pearson's Correlation Coefficient was used to evaluate attitudes toward health information dissemination and expected behaviors. Quantitative data were coded and converted to numbers for analysis. Tests of significance were based on the $p<.05$ level. Analyses of Variance (ANOVA) was used to determine if there were statistically significant differences between the responses of parents from the different grades and gender of parent responding.

Results

The results of the study revealed that parents had specific preferences for the method of school notification of critical health information. They were first asked about the schools' existing websites and whether they included postings of health information alerts. Of the parents surveyed, 52.5% said that they did not know if the websites alerted them to disease outbreaks at the school, 9.3% said that they did not post alerts, and 38.3% stated that it did inform them of possible disease outbreaks. See Figure 1.

Two questions were asked of parents regarding their preferences. First, when asked how parents are currently notified of a health crisis, or school closure, participants chose from a list of possible methods and chose "Yes" or "No" for each. The percentages

were as follows: 40.4% letter sent home with their child, 68.9% local news, 34.2% telephone call to the school, 48.4% given a phone message, 49.7 given a text message to their cell phone, 62.7% received an email message, 7.5% Facebook posting, 5% Twitter posting, 52.8% school website posting, 18.5% don't know. See Figure 2.

When asked about their preferred method of notification of a contagious disease outbreak, parents were asked to check "Yes" or "No" next to possible methods of notification. The percentages showing current notification options were reported as follows: 87.7% preferred email, 62.3% preferred to have a letter sent home with their children, 60.5% preferred the school website, 59.9% preferred a text message to their cell-phones, 48.1% preferred a voicemail message, and only 9.3% preferred Facebook, with 8% preferring Twitter. See Figure 3.

Parents were asked how important they felt it was to close the school during a contagious disease outbreak similar to that seen with the H1N1 virus in 2009. Results showed that 47.8% felt that it was extremely important that the school be closed, 40.9% felt that it was moderately important that the school be closed, 8.2% felt that it was neither important or unimportant, 2.5% felt that it was moderately unimportant, and 0.6% felt that was extremely unimportant. See Figure 4.

When asked if the school informed parents of symptoms that require the student be kept at home, parent responses showed that 50.3% said the school did inform them of symptoms that would require absenteeism, 16% said that the school did not inform them of symptoms that would require absenteeism, and 33.1% stated that they did not know if the school informed them of symptoms which would require absenteeism. See Figure 5.

Parents were then asked what symptoms their child could possess that would lead

them to keep that child home from school. Participants were asked to check yes or no to each of the following symptoms: fever 93.2%, cough 23.6%, runny nose 6.2%, sore throat 42.9%, body rash 71%, nausea 77.2%, vomiting 95.7%, and diarrhea 83.2%. See Figure 6.

Parents were also asked if they felt that the school supported their decision to keep their child home from school when they were ill. Of parents surveyed, 31.5% stated that the school was strongly supportive of their decision, 40.7% stated that the school was moderately supportive of their decision, 16.7% stated that the school was neither supportive nor unsupportive of their decision, 8% stated that they felt the school was moderately unsupportive of their decision, and 2.5% felt that the school was strongly unsupportive of their decision to keep their child at home. See Figure 7. When asked if parents felt that it was a financial burden for you to keep your child at home, 72.7% stated that there was no financial burden to keeping a child at home, and 23% felt that there may moderate financial burden, while only 4.3% stated that there was extreme financial burden for keeping a child at home when they are feeling sick. See Figure 8.

Finally, parents were asked about the how well they felt the school was taking action to prevent the spread of disease and contagious disease outbreaks at their facilities. The first question asked parents to rate how well they felt the school is educating the students about disease prevention. Of the parents surveyed, 10.5% stated that they felt that the school was doing extremely well in educating the students about preventing the spread of disease, 32% stated that they felt the were doing moderately well, 23.5% stated that they were doing slightly well, 10.5% stated that they were rarely educating the students about preventing the spread of disease, and 20.4% stated that they did not know

how well the school was doing at educating their children about preventing the spread of disease. See Figure 9.

The second question asked participants if they knew if the school was providing supplies and means to prevent spread of contagious diseases including the availability of hand sanitizer and time for hand washing. Results showed that 29.8% of parents stated that the school was doing extremely well in providing these, 39.8% stated that the school is doing moderately well, 9.3% stated that they are doing slightly well, and 4.3% stated that they were only rarely providing these preventative measures. No responses showed that parents felt that nothing was being done to prevent disease, but 16.8% stated that they did not know if the school was providing these things. See Figure 10.

Conclusions and Recommended Research

Results show that parents have very specific preferences about how they would like to be informed about a school closure or contagious disease outbreak. The majority of parents felt that it is important that a school be closed in the event of an outbreak similar to the H1N1 outbreak in 2009. Parents were unsure of exclusion criteria regarding their children at each school, and may therefore differ in opinions of what symptoms should require absenteeism, and finally, parents felt that the school is doing some education that will help their children prevent the spread of disease, but there is certainly room for improvement. Three main issues have come to light from this brief survey that warrant further investigation on a more widespread scale. First, this survey shows that parents want pertinent health information to be delivered to them. In a time where parents are very busy and often having to multitask throughout the day, asking parents to search

for pertinent health information is likely to be ineffective. The sites that require parents to search for important information are those least selected in the study, whereas the methods that include information taken directly to parents, such as emails, text-messages, and even letters home with their children (if time allows), are more requested. Second, parents do feel that keeping their children at home during an outbreak of a contagious disease is warranted. Given the availability of diseases to travel on airplanes from anywhere in the world, the possibility of another outbreak similar to the H1N1 outbreak in 2009 is not only possible, but likely. The immediate closure of a school, perhaps thought by school districts to be an extreme measure, seems welcomed by parents. This too, warrants further study and research to set up a protocol in which school superintendents neither hesitate nor debate the issue of whether to close the schools based upon parent reception. Third, this survey shows that there is improvement needed in educating parents about the exclusion criteria for absenteeism within each school and how the school is educating students on prevention of infectious disease.

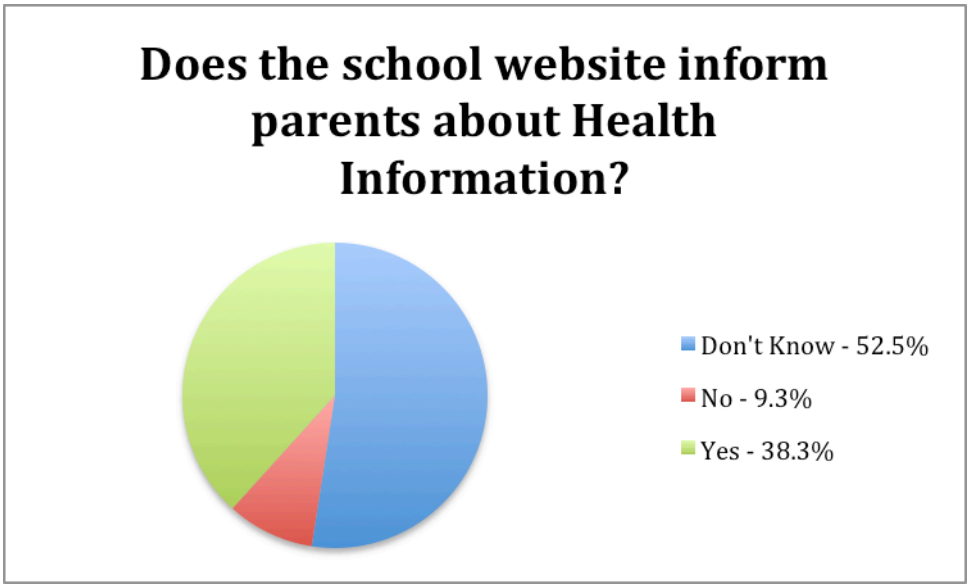


Figure 1 School Website Posting of Disease Outbreaks

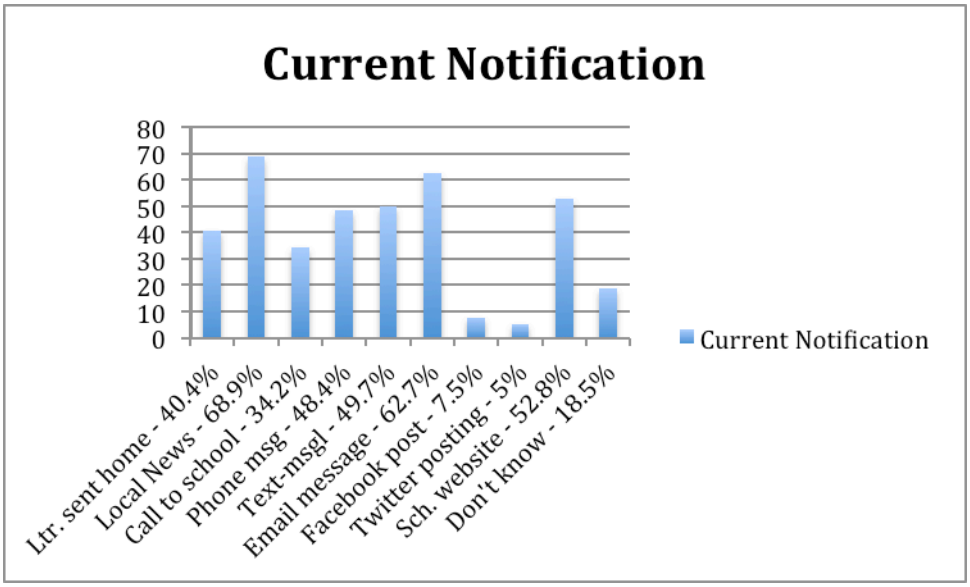


Figure 2 Current Notification of Parents for School Closure for Weather, Contagious Disease Outbreak, or Natural Disaster

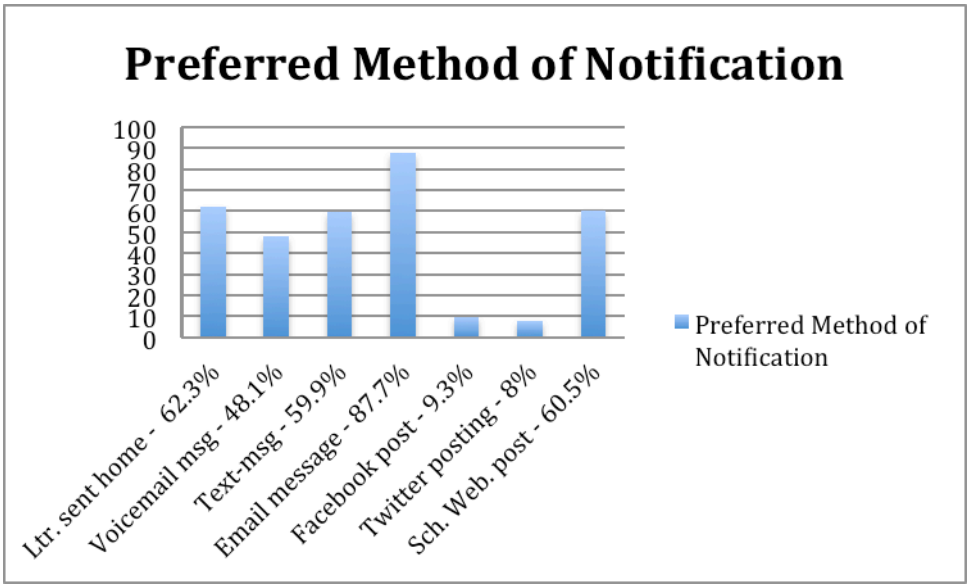


Figure 3 Parents' Preferred Method of Notification

of Contagious Disease Outbreaks

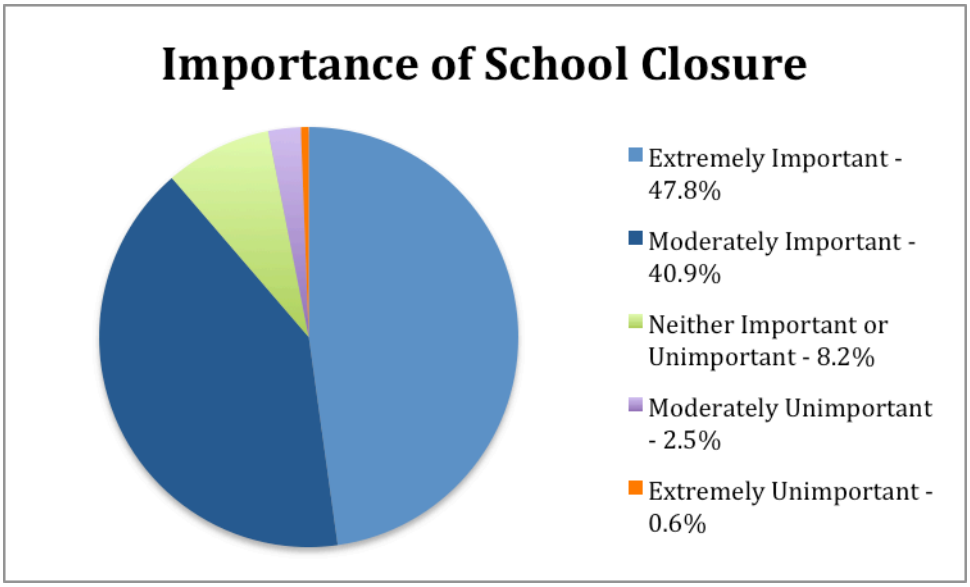


Figure 4 Importance of School Closure

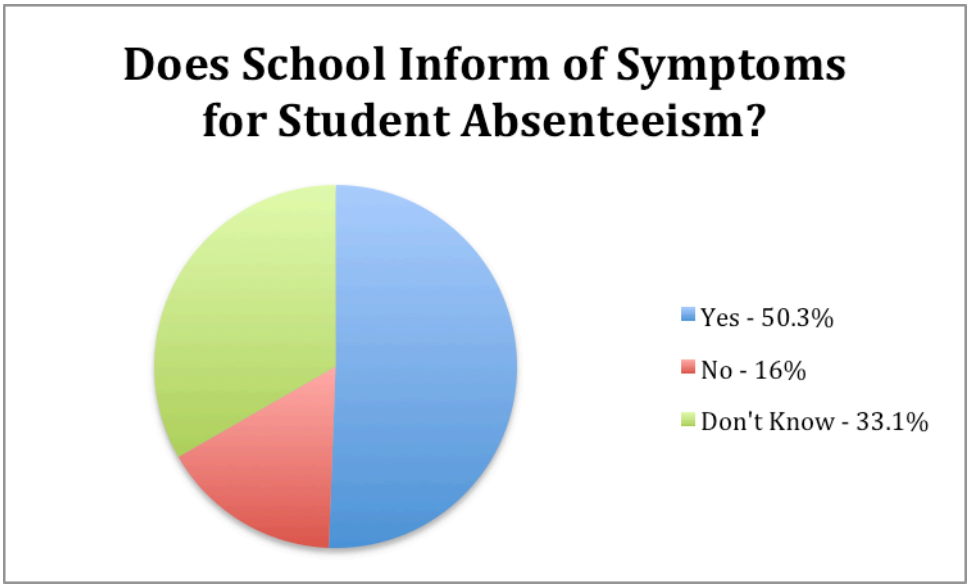


Figure 5 Does School Inform of Symptoms for Student Absenteeism?

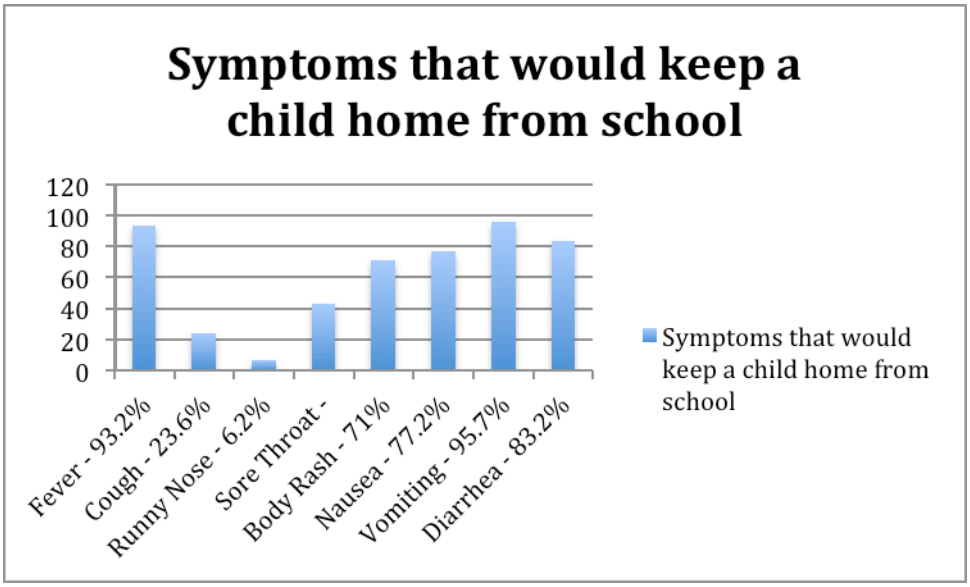


Figure 6 Symptoms that Would Keep a Child Home from School

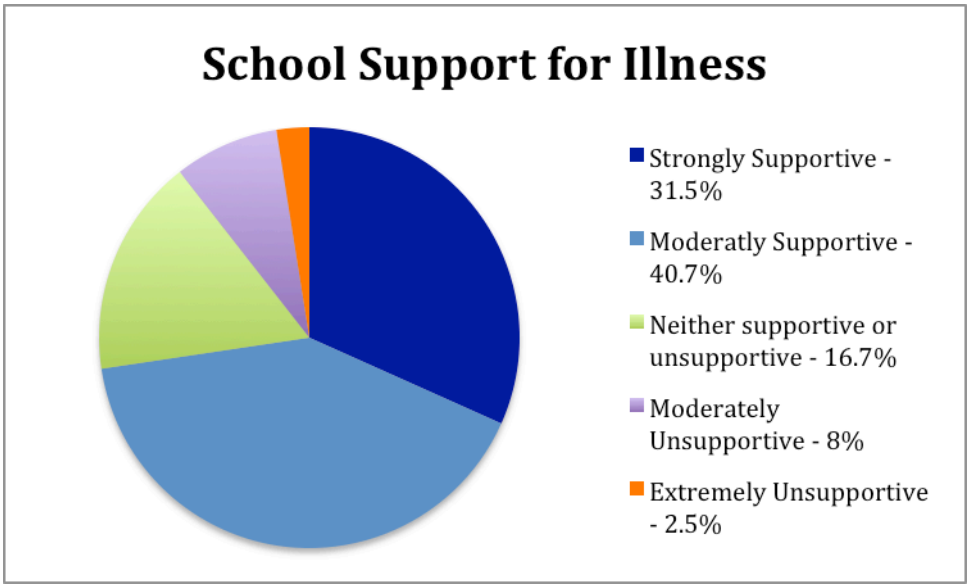
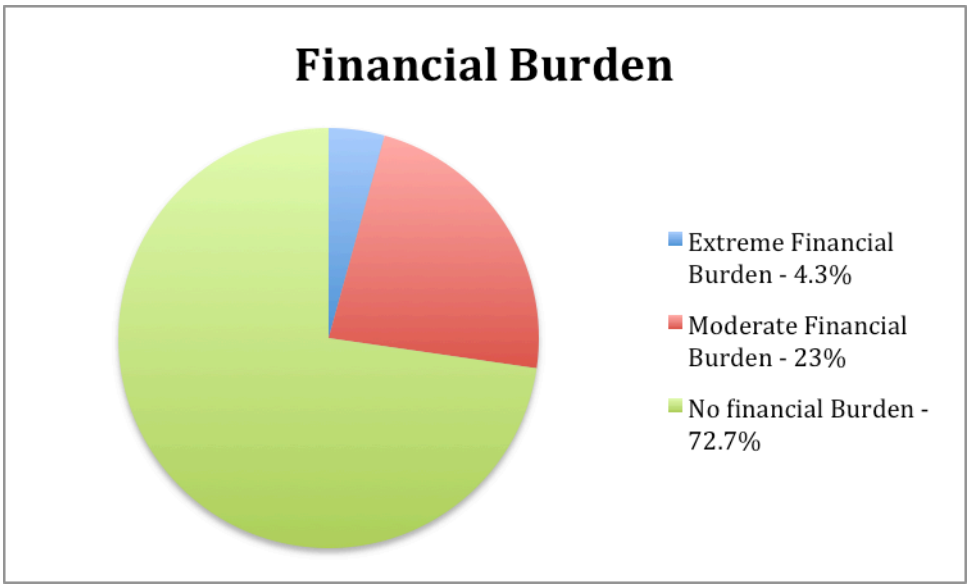


Figure 7 School Support for Illness



Graphic 8 Financial Burden on Parents to Keep Child at Home When Ill

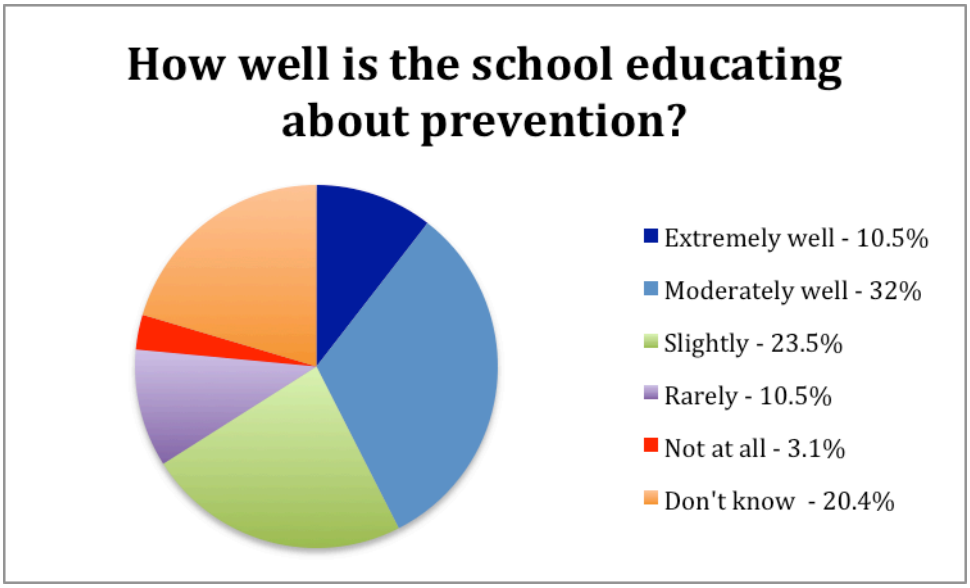


Figure 9 How Well is the School Educating About Prevention?

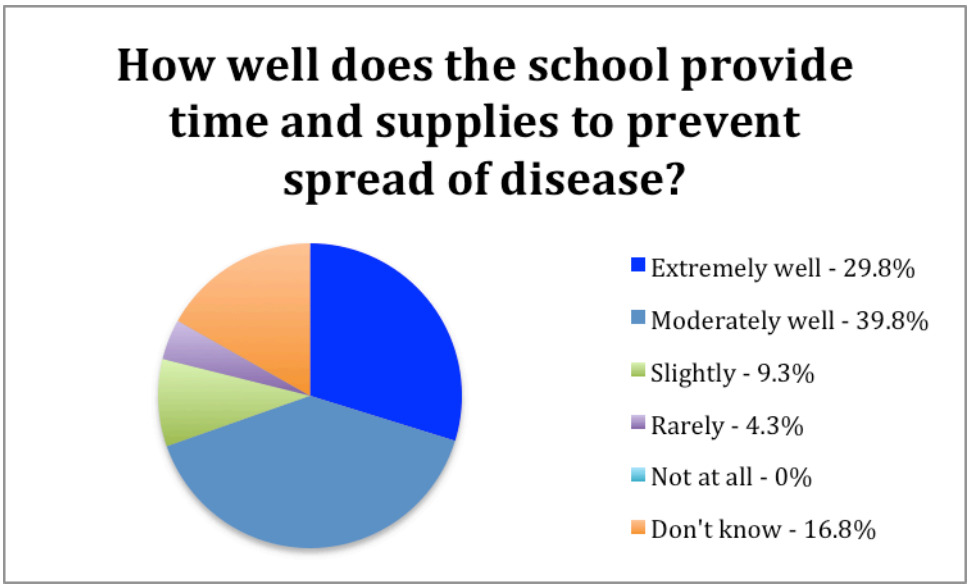


Figure 10 How Well Does the School Provide Time

and Supplies to Prevent Spread of Disease?

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CHAPTER 3

DISCUSSION AND CONCLUSION

Summary

The purpose of this research was to provide new information on the preferred method for health information communication by schools regarding health epidemics or current outbreaks at schools. During an outbreak such as the 2009 H1N1 flu pandemic, essential information is being disseminated from the CDC through the health department to schools. This information is timely and crucial to preserving the health of their children during an outbreak. To ensure that this information is sent through the most efficient and preferred route is imperative. The study sought to answer this question by conducting a survey with 1,700 parents in a western high school and middle school. The schools chosen were two schools that were most affected by the 2009 H1N1 virus and had to close in May of 2009 to protect the health of students. One hundred sixty-two (n=162) surveys were returned showing clear parent preferences for the dissemination of this information.

Current and Preferred Mediums for Health Information

Of the two schools whose students were sent home with the survey, both have websites that include information regarding the flu virus and what symptoms to watch for. Yet when asked if the school website contained this information, the majority (61.8%) of parents either did not know whether the school website gave health information regarding disease outbreaks and prevention or believed that there was no information given on the site. It should be noted that on both websites, the information is listed under the "Student" menu, and then the "School Nurse" link. It is unknown how often parents look at the school websites, and whether or not they go to the "School Nurse" link. There is not a direct link to health information and it can take a few minutes to navigate through the different windows to find these.

Our survey showed that most parents preferred to have the information sent to them directly rather than having to go to a site to look for the information. Two questions were asked of parents regarding their preferences. First, "how are you currently notified of a health crisis or school closure?" and secondly, "how would you prefer to be notified?" The results showed that most parents prefer information to be sent to them directly, rather than having them go to a site, such as the website or Facebook, to find the information. The most chosen response was for parents to receive an email. This was followed closely by a letter home (if this would be applicable in the situation), and either a voicemail message or text message to the parent's phone.

When parents were asked how they are currently notified of this information, parents were split on the possible manner of this communication. It should be noted that as there were no current outbreaks warranting school closure, the most common reason

schools close is weather related. Therefore, the question to parents about information on health outbreaks included school closure due to weather. Parents again responded that most were notified on the local news, by email, or by a phone message (either voicemail or text). Here again, 87.7% of parents also stated that they currently get information sent to them in emails, rather than having to seek it out. However, a substantial number (60.5%) did state that they look to the school website for information about school closures. Here again, parents did not see Facebook or Twitter as viable resources for immediate information regarding a health crisis.

Parents' responses regarding the importance of closing the school due to health outbreaks is also favorable. Both of these schools, including the elementary schools in this district, were closed from April 30 to May 1 in 2009 due to the Novel H1N1 outbreak in the area. Having experienced this closure, it is notable that 88.7% of parents stated that they feel that it is extremely or moderately important to close a school if there were a similar outbreak to the Novel H1N1 outbreak that occurred in 2009. One parent did note in a comment that it was important that parents did not just divert their children to other public gathering places such as movie theaters and shopping malls because school was closed.

Exclusion Criteria for Absenteeism Due to Illness Awareness

According to the Susan Aronson and Timothy Shope, authors of *Managing Infectious Diseases in Child Care and Schools,* there are three "key" criteria for exclusion of the ill child who does not need immediate medical treatment but may need to be sent home or kept home from school. These are that "the illness: 1) prevents the child from

participating comfortably in activities, 2) results in a need for care that is greater than the staff can provide without compromising the health and safety of other children, or 3) poses a risk of spread of harmful disease to others. (It is also noted that) if any of these criteria are met, the child should be excluded, regardless of the type of illness" (Aronson, 2008, p. 72). While this information may be readily available to practitioners, whether or not parents are aware of this difficult is impossible to assess. Further, the school website is not helpful to a parent who is unsure of whether they should send their child to school.

Results of this survey showed that at least one-third to one-half of parents surveyed did not know if there were any symptoms for which their child should be kept at home, or answered that the school did not give them information regarding student illness requiring absenteeism. This survey additionally sought to assess for what symptoms would parents most likely keep their children home from school. Given that at least half of parents surveyed were not aware of a school policy on this, these results were most likely their personal opinions. When one compares this with the Novel H1N1 outbreak, which consisted of fever and sometimes but not always coughing, it is encouraging that parents consider a fever a reason to stay at home. However, if a similar flu virus did not include a fever at its onset, many students might attend school with a runny nose and cough spreading the virus to others before becoming sick enough to validate missing school. This could also be true of the pertussis outbreak seen in recent months, where students were able to attend school because with little or no fever but a persistent cough. Often the most contagious stage of a disease is during this preliminary period where the student is not yet "sick enough" for parents or teachers to feel it warranted staying at home. Body rash was considered a symptom that warranted keeping a child at home.

These data may be influenced by the fact that there was a measles outbreak during the year before this study was conducted. However, what must be included is the fact that most of the time, many of these symptoms are not an indication of a virulent disease outbreak, and students could attend school without infecting others. Therefore, an important factor in determining whether these symptoms are merely the common cold or possibly something more serious is the information given to parents by the school regarding current disease outbreaks. The faster information regarding a serious and highly contagious outbreak is disseminated, the more prudently parents can assess whether their child should be kept at home. Another factor in considering whether a child can be kept at home due to illness may be largely whether the school supports this absenteeism. As stated in the school absenteeism policy on their website, the federal government's *No Child Left Behind Policy* mandates a 93% attendance rate. Further, the absentee policy states: "A doctor's medical excuse is required for any absence or chronic illness over 3 days. The doctor's excuse must be submitted within one week following an absence as long as parent excuse is submitted within 3 days" (http://pchs.pcschools.us/woad-local/media/2011_2012_attendance/attendance.pdf). In the same policy, it is stated that it is preferred that the student contact each teacher directly to obtain homework from missed coursework during the absence. While these policies could be seen as being nonsupportive of a student who has symptoms that genuinely require his/her absence, 72.2% of parents in our study felt that the school was strongly or moderately supportive of keeping a child at home when they are sick. Often students are forced to go to school due to lack of child-care arrangements requiring parents to stay at home from their employment. However, as expected with children over

the age of 13, most families stated that there was little financial burden upon them. Further, the area of Summit County School District is in an affluent area of Summit County. Parents were not surveyed as to their income level, but it is likely that the affluence of the area biased this question.

School Education About Disease Prevention and Provisions for Disease Prevention

Finally, in assessing whether parents felt that the school was both educating students about prevention of contagious diseases, and providing students with supplies or time for basic preventative measures, our survey was mostly positive. However, there was some needed improvement regarding student and parent education about disease prevention. Parents did not appear to be cognizant of educational measures being taken to prevent the spread of disease at these schools. This does not mean that these measures are not taking place, but rather that if they are, parents are unaware.

Implications and Conclusion

Three main issues have come to light from this brief survey that warrant further investigation and are recommend school policy for communication with parents on a more widespread scale. First, this survey shows that parents prefer that pertinent health information be delivered directly to them. While this does show a passive behavior trait, in a time where parents are very busy and often having to multitask throughout the day, asking parents to search for pertinent health information is likely ineffective or in the benefit of the school. The sites that require parents to search for important information, a

more active behavior, are those least selected in the study. The methods in which information is taken directly to parents such as emails and phone messages are the most requested mediums. The number of parents who believed information was not on the website or stated that they didn't know if it was on the website was significant. This shows that the website is at least partially ineffective. A direct link with clear pathways to health information may be a better option for the site. Also, a campaign to inform parents of the different aspects offered by the site may be beneficial.

Second, the survey showed that parents do feel that keeping their children at home during an outbreak of a contagious disease is warranted. Given the ability of diseases to travel on airplanes from anywhere in the world, the possibility of another outbreak similar to the H1N1 outbreak in 2009 is not only possible, but also likely. The immediate closure of a school in the event of a contagious disease outbreak was shown to be welcomed by parents. While the health department or superintendent often mandates this closure, it is reassuring that parents also welcome it. This may be helpful to superintendents who are debating the issue of whether to close the schools based upon parent reception.

Third, this survey shows that there is improvement needed in educating parents about the exclusion criteria for absenteeism within each school and about how the school is educating students on prevention of infectious disease. This may already be taught in school health classes to students with the information not reaching their parents. Therefore, a campaign to educate parents, perhaps at a "Back to School Night" or similar event, with student-made posters and skits is one option that may teachers and administrators may take. By educating parents on what measures the school is taking to

prevent spread of disease along with what parents at home can do to help the school can empower parents to make better decisions and help prevent spread of disease. Further, posters or flyers reminding students to wash hands frequently, cover their cough, and remain at home when ill may not only deter unhealthy habits, but remind the student and parent population that the school is diligently working on preventing the spread of disease.

Though the threat of the 2009 Novel H1N1 flu outbreak has largely been alleviated for now due to vaccination efforts, recent outbreaks of measles and pertussis have been observed in these same schools. Additionally, new strains of seasonal flu are consistently monitored. Further, in a world in which a highly contagious virus developing anywhere in the world is just an airplane ride away from a high school, mall, or movie theater, the need for immediate action when a contagious disease outbreak is first observed is essential. Having clear lines of communication with trustworthy information delivered immediately to parents is of the utmost importance in all schools.

Recommendations for Future Studies

Of course, the preferred method of school to parent communication will likely change with time as more parents rely on computer and cell phone technologies such as I-phones emails, text messages, twitter, and tweets. Also the results of this survey were limited to more affluent parents who also have little time for examining school websites, but do have access to emails. One recommendation for future research in this area would be periodic parent/school communication surveys conducted by each school district, say every 5 years, with policy and practice changes made on the results of the parent survey.

This would also improve the generalizability of the survey results and show trends over time. A higher survey return rate would improve the reliability of the results and possibly larger incentive for survey completion should be offered to parents. Further, this study was conducted towards the end of the school year. As a result, many high school students were disinterested in completing the forms and teachers reported that many forms were not take home by students. A future study done at the beginning of the school year during orientation or distributed to parents on a "Back to School Night" or "Parent Teacher Conference" might be more effective in a high school setting. It should be noted, however, that based on this study, further research to ascertain the ways in which this line of communication can best be streamlined in every school throughout the United States and abroad is certainly warranted and could potentially be life saving.

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APPENDIX A

COVER LETTER TO PARENTS

May 24, 2012

Dear Parents:

As many of you may know, the Novel H1N1 influenza, initially called Swine Influenza, has affected millions of Americans over the past 2 years. The Park City School District was one of the earliest to feel its effects. Recently, a measles outbreak affected Utah school-aged students for the first time in many years. It is important that any new contagious disease outbreaks be immediately contained. In order to keep you well informed about the potential risk of contagious disease outbreaks, we are conducting the following survey regarding the communication you have received and will continue to receive and your preferences about future communication regarding contagious disease outbreaks from your children's schools.

This form does not require that you identify yourself by name. All responses to these questions will be kept anonymous. If you choose not to complete this form, there will be no loss of educational services. We will use any information that you provide here for the purposes of health investigation only. **We would greatly appreciate your assistance in completing this questionnaire about your OLDEST school-aged child. Please return the questionnaire to your child's teacher as quickly as possible.** If you have any questions or concerns, please contact Karol Kumpfer, at the

University of Utah Department of Health Promotion and Education at 801-581-8114 or Cathryn Clayton at c.clayton@utah.edu.

Thank you for your time in this matter. It is greatly appreciated,

Cathryn Clayton

APPENDIX B

PARENT QUESTIONNAIRE

(Please complete all pages of this survey regarding your oldest child at this school)

1. Today's date: _____/____/_____ Month Day Year	2. How many of your children attend this school? _____
3. Your gender: □ Male □ Female	4. Age of your OLDEST child attending this school: _____
5. Your relationship to child: _____	6. Child's gender: □ Male □ Female
7. Child's current grade level: □ 6th grade □ 7th grade □ 8th grade □ 9th grade	8. What month and year did your child first attend Treasure Mountain Junior High School? _____/_____ Month Year
9. Does the school's website alert you about the occurrence of a contagious disease outbreak? □ Yes □ No □ Don't know	
10. Please indicate below which ways you would like to receive information about a contagious disease outbreak at your child's school: (Please check Yes or No for each method.) Letter sent home with your child □ Yes □ No Pre-recorded voicemail message □ Yes □ No	

Text-message to cell phone □ Yes □ No

Email message □ Yes □ No

Face-book posting □ Yes □ No

Twitter posting □ Yes □ No

School website posting □ Yes □ No

Other (please specify): _____

11. Would it be helpful to you to have health information distributed in a language other than English?

□ Yes Please specify language: _____
□ No

12. If there were to be another contagious disease outbreak that was as serious as the Novel H1N1 outbreak at your child's school, how important do you feel it is that the school be closed?

□ Extremely important
□ Moderately important
□ Neither important or unimportant
□ Moderately unimportant
□ Extremely unimportant

13. How are you alerted that your child's school may be closed for any reason, including weather, contagious disease outbreaks, natural disasters, etc. (Please indicate Yes or No for each method.)

Letter sent home with your child □ Yes □ No

The local news report □ Yes □ No

Telephone call to the school □ Yes □ No

Pre-recorded voicemail message □ Yes □ No

Text-message to cell phone □ Yes □ No

Email message □ Yes □ No

Face-book posting □ Yes □ No

Twitter posting □ Yes □ No

School website posting □ Yes □ No

Don't Know □ Yes □ No

Other (please specify): _____

14. How well do you feel your school supports you in keeping your child home when he/she is sick?

□ Strongly supportive
□ Moderately supportive
□ Neither supportive or unsupportive
□ Moderately unsupportive
□ Extremely unsupportive

15. Which of the following symptoms would cause you to keep your child home from school?
(Please check Yes or No for each symptom.)

Fever □ Yes □ No

Cough □ Yes □ No

Runny nose □ Yes □ No

Sore Throat □ Yes □ No

Body Rash □ Yes □ No

Nausea □ Yes □ No

Vomiting □ Yes □ No

Diarrhea □ Yes □ No

16. Does your child's school inform you of symptoms for which your child should be kept home from school?

□ Yes
□ No
□ Don't know

17. How much of a financial burden is it for you to keep your child home from school when your child is feeling sick?

□ Extreme financial burden
□ Moderate financial burden
□ No financial burden

18. How well do you feel that the school is educating students about the prevention of contagious diseases?

□ Extremely well
□ Moderately well
□ Slightly
□ Rarely
□ Not at all
□ Don't know

19. How well do you feel that the school supports the prevention of contagious diseases by providing supplies including hand sanitizer, hand soap, availability of sinks for hand washing, time provided for hand washing, etc.?

□ Extremely well
□ Moderately well
□ Slightly
□ Rarely
□ Not at all
□ Don't know

20. Please provide any information or suggestions about the way that Park City High School could communicate with you about contagious disease outbreaks or other health related issues.